



XT1

AM FM RDS / RBDS Tuner

User Manual

www.xantech.com

Thank you for purchasing the XT1 Tuner. We take great pride in the design and manufacturing quality products, and are confident that your new XT1 will provide you with many years of enjoyable and trouble-free service. Should you ever have any need to call upon our services, please feel free to contact us at the address shown at the end of this manual or contact the dealer or distributor from whom you purchased this product. Full details of the warranty coverage provided can be found at the end of this booklet.

Important Safety Instructions

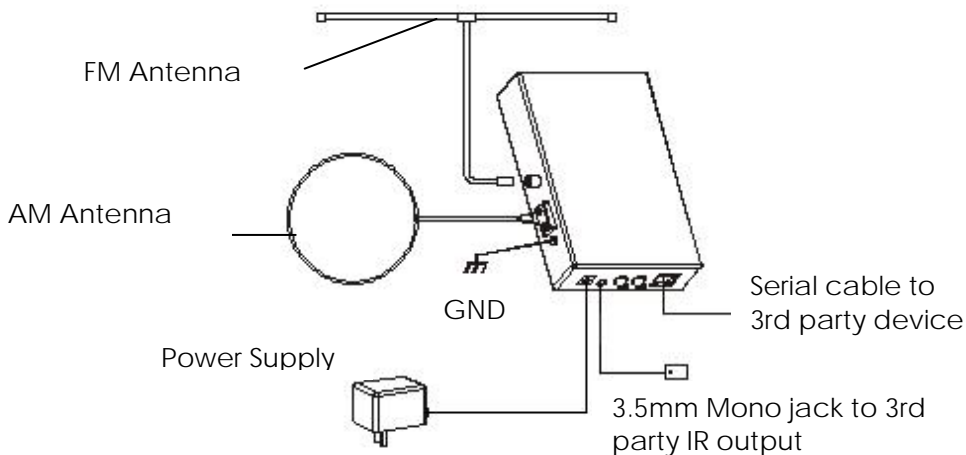
1. ***Important! Please read all the safety and operating instructions shown in this manual before operating this equipment.***
2. Heed all warnings and follow all operating instructions.
3. *Warning: To assure safety during a lightening storm, the XT1 must be grounded, refer to the diagrams on page 4.* Also, if the unit is left unattended and unused for long periods of time, it is recommended that you unplug the unit from the wall AC outlet.
4. Locate the product away from heat sources such as stoves, heat sources, radiators or other appliances including other amplifiers that produce heat.
5. Mount the equipment in a wall or cabinet only as described in this owner's manual.
6. Do not use this equipment near water, in damp locations, or outdoors.

Each XT1 package contains

- XT1 AM/FM Tuner with RDS/RBDS
- IR cable: 3.5mm mono socket - 3.5mm stereo jack
- Serial cable: DB9 female - RJ45 male
- Audio Cable: L/R RCA male to 3.5mm stereo female jack
- Audio Cable: L/R RCA male to L/R RCA male
- Power supply 12VDC 300mA
- FM Dipole Antenna
- AM loop antenna
- User Manual

Optional (sold separately)

- 1U Rack mount kit for up to 3 tuners: Xantech part number 1U3XT1RM



RS232 control

The XT1 can be controlled via RS232. To connect a serial control device, the supplied serial cable should be used. This cable establishes the RS232 communication to and from the tuner.

The pin layout and RS232 protocol can be found in the back of this manual.

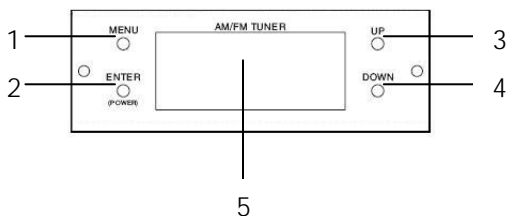
IR Receiver input

To control the XT1 via IR, an IR extender system needs to be used. There is no IR receiver inside the LCD display. To connect an industry standard IR extender system, use the supplied IR cable and plug the stereo jack of this cable into the IR sensor input of the XT1, and use the mono socket to attach the IR extender output to. Tip = IR-SIGNAL, Sleeve = GND.

Antenna's

Position and secure both antennas individually until the clearest sound is heard.

Front Panel Controls



(1) MENU

Pressing this button allows you access to the following functions:

- AM/FM band selection
- Auto/Manual tuning selection
- Scan the preset stations
- Memorize a station
- Set the IR Code.

(2) ENTER (Power)

When plugging in the power transformer the first time, the tuner will automatically turn on. Pressing this button for **4 seconds** will turn the unit ON from standby (sleep mode), or put the unit into standby from its ON state.

(3) UP

Allows for tuning up to higher frequency stations.

(4) DOWN

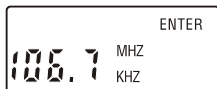
Allows for tuning down to lower frequency stations.

(5) LCD DISPLAY

The display will turn off after approximately 3 to 4 minutes. To turn display ON, simply press the ENTER button.

Tuner Operation

MAKE AM/FM BAND SELECTION



1. Press and release the MENU button until either the ENTER and MHz characters flash, or the ENTER and kHz characters flash.
2. Press the ENTER button until either MHz or kHz stops flashing.
3. Press either UP or DOWN button to obtain MHz or kHz. (**note** – MHz is the FM band and kHz is the AM band)
4. Either wait until the ENTER stops flashing or depress the ENTER button.

EZ Steps:

1. Press MENU once
2. Press ENTER
3. Press UP
4. Press ENTER (or wait 3 seconds)

SELECT AUTO OR MANUAL TUNING

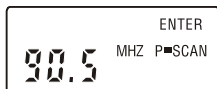


1. Press and release MENU button until AUTO and ENTER flash.
2. Press ENTER button to stop flashing.
3. Press UP or DOWN button to change to a new tuning mode.
4. Press ENTER to switch to the new mode.

EZ Steps:

1. Press MENU twice
2. Press ENTER
3. Press UP
4. Press ENTER (or wait 3 seconds)

LISTEN TO PRESET STATIONS OR SCANS



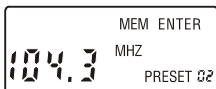
1. Press and release MENU until P-SCAN and ENTER characters flash.
2. Press ENTER.
3. Preset stations or scans will continue to advance until the ENTER button is pressed.

EZ Steps:

1. Press MENU three times
2. Press ENTER
3. When desired station is playing, press ENTER

NOTE. Although the display only shows frequency steps of 0.1MHz, the actual tuning is done with steps of 0.05Mhz. (in EU mode only)

TO PRESET MEMORIES



1. Select a desired station.
2. Press and release MENU button until MEM and ENTER characters flash.
3. Press ENTER button.
4. Select desired PRESET number by pressing UP or DOWN button.
5. Press ENTER button.

EZ Steps:

1. Select desired station
2. Press MENU four times
3. Press UP or Down
4. Press ENTER button

RDS/RBDS INFORMATION

RDS/RBDS information is not shown on the XT1 display and is only available through its RS232 connection.

Xantech Limited Warranty

Xantech Corporation ("Xantech") warrants to the holder of a valid proof of purchase as the first end-user purchaser ("You"), its products to be free from defects in materials and workmanship for the periods specified below from the date of purchase. This limited warranty extends only to You for product purchased and used in the United States of America. For product purchased outside of the United States of America, You must contact the Xantech authorized distributor in your region for warranty services. Product is not intended for end user installation. If within the applicable warranty period above You discover such item was not as warranted above and You promptly notify Xantech in writing, Xantech shall repair or replace the items at its option. Xantech may elect which remedy or combination of remedies to provide in its sole discretion. Xantech may use functionally equivalent reconditioned/refurbished/pre-owned or new products or parts under this limited warranty. This warranty shall not apply (a) to product which shall have been installed by other than an authorized Xantech installer, (b) to installed product which is not installed to Xantech's specifications, (c) to product which shall have been repaired or altered by others than Xantech, (d) to charges for installation or set up or adjustment of customer controls, (e) to product that has suffered normal cosmetic deterioration (f) to product which shall have been subjected to negligence, misuse, abuse, accident, or damage by circumstances beyond Xantech's control, including, but not limited to, lightning, flood, electrical surge, tornado, earthquake, or any other catastrophic events beyond Xantech's control, or (g) to product which shall have been subjected to improper operation, connected equipment failure or malfunction, inadequate packing or shipping damage, maintenance or storage, or to other than normal use of service. The foregoing warranties do not cover reimbursement for labor, transportation, shipping, removal, installation, or other expenses which may be incurred in connection with repair or replacement. All claims for product shipping damage must be processed within 3 days of receipt by You.

A Xantech Return Authorization (RA) must be obtained from Xantech by You, your installer or your distributor for Product covered under this warranty. Covered product must be sent to Xantech together with proof of purchase, RA number, prepaid and insured to Xantech. Freight collect shipments will be refused. Risk of loss or damage in transit is borne by the sender. Xantech's warranty does not cover Products which have been received improperly packaged, altered, or physically damaged. Products will be inspected upon receipt.

Except as may be expressly provided and authorized in writing by Xantech, Xantech shall not be subject to any other obligations or liabilities whatsoever with respect to equipment manufactured or sold by Xantech or services rendered by Xantech.

THE FOREGOING WARRANTIES ARE EXCLUSIVE AND IN LIEU OF ALL OTHER EXPRESSED AND IMPLIED WARRANTIES, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

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To insure that consumers obtain quality pre-sale and after-sale support and service, Xantech products are sold exclusively through authorized dealers and authorized distributors. The warranties on Xantech products are NOT VALID if the products have been purchased from an unauthorized dealer or distributor. In order to determine if your Xantech re-seller is authorized, please call Xantech (800) 843 - 5465.

Xantech products (go to xantech.com/warranty for model numbers)	Warranty Duration
IR Receivers and IR emitters	Limited lifetime
Remote Control Switchers	Limited lifetime
Modules and Connecting Blocks	Limited lifetime
Accessories	Limited lifetime
Speakers	Limited lifetime
Volume Controls and Speaker Selectors	5 year limited
MRC, BX, ZPR and Commercial Products	2 year limited
Amplifiers	2 year limited
Control Interfaces	2 year limited
Hand Held Remote Controls	1 year limited
SPLCD Product	1 year limited
Source Components (includes XT1)	1 year limited

Specifications

FM

Frequency Range:	88 to 108 MHz (US) 87.5 to 108 MHz (EU)
Antenna Input Impedance:	75 ohm
Usable Sensitivity @30dB S/N:	- 5 dBu (typical)
Signal/Noise ratio - Mono	62 dB A
- Stereo	55 dB A
THD(1kHz) - Mono	0.2 %
- Stereo	0.4 %
Image Rejection:	79 dB
Frequency Response:	50 to 15k Hz
Stereo Separation:	33 dB
Capture Ratio:	2 dB

AM

Frequency Range:	530 to 1700 kHz (US) 525 to 1605 kHz (EU)
Usable sensitivity:	23 dBu
IF rejection:	90 dB
Selectivity:	100 dB
Distortion:	0.5% (typical)
Signal/Noise ratio:	50 dB A
Frequency Response:	50Hz to 3kHz
Power requirement:	12VDC 300 mA
AC voltage for Power supply :	
USA/Canada	120V, 60Hz
Europe	230V, 50Hz

Dimensions: 6"(153mm) D x 4"(102mm) W x 1-1/4" (32mm) H.

Appendix 1

RS232 Protocol

Interface

Baud Rate : 9600

Stop Bit: 1

Data Bits : 8

Parity Bit: none

Transmission: In ASCII codes

Format

<ZoneID><_><ProductID><_><Command><_><Parameter1><_><Parameter2><_><CR>

- <Zone ID>

Is a number from 00 to 99, sending "00" selects all zones.
The maximum number is 99.
Zone ID is factory set at "0", but can be reassigned.
- <Product ID>

For the XT1, the factory default setting for product ID is 10
- <Command>

Is 1 to N, N may be in one or multiple digits as defined in the first column in the table below
- <Parameter1>

None, or is 1 to N, N may be in one or multiple digits as defined in the "Parameter1" column below
- <Parameter2>

None, or is 1 to N, N may be in one or multiple digits as defined in the "Parameter2" column below
- <_>

The fields are separated by an underscore "_"
- <CR>

A character return to terminate the command line
- <Zone ID>

If multiple T118 tuners are used in one application, the Zone ID of each tuner shall be reassigned with a unique number.

In this way each tuner can be controlled individually via the RS232 port. Use command 14 in the following list to program a new Zone ID.

T118 Command	Purpose	Parameter1	Purpose of Parameter1	Parameter2
1	Power on/off	1	Power off	
		2	Power on	
		3	Toggle power on/off	
2	Band switching	1	AM	
		2	FM	
		3	Toggle between AM/FM	
3	Preset access	1 to N	1 for preset 1, 32 for preset #32	
4	Direct frequency tuning	87..107	Enter the integral part of a FM frequency	00..95
		5..16	Enter the 1st or first two digits of an AM frequency	00..99

5	Auto Memory	1	Start scan from the current frequency and write each station into preset sequentially	
		2	Start scan from FM 87.5MHZ to 107.95 then AM 530 to 1690, write each station into preset sequentially.	
6	RDS Mode	1	Update RDS info query	
		2	Update RDS info automatic feed	
7	Preset Scan	1	Scan up preset number to play each preset for 5 sec	
		2	Scan Down preset number to play each preset for 5 sec	
		3	Stop the preset scan	
		4	Move and stop only once at the next preset of higher number	
		5	Move and stop only once at the next preset of lower number	
8	Write/Erase a preset	1	Enter a "0" to erase the current preset shown in the display	
		2	write the frequency into the entered number	01..32
9	Up/Down Tuning	1	Auto tune up frequency	
		2	Auto tune Down frequency	
		3	Manual tune up frequency one step	
		4	Manual tune down frequency one step	
10	Stereo/Mono mode	1	Let Tuner received signal controll the mode	
		2	Force the tuner into Mono mode reception (Stereo mode is set each time the auto-tuning is engaged)	
11*	Get frequency	1	Output in ASCII, the band and frequency listening	
	Get Preset number	2	Output in ASCII, the preset number that is displaying	
	Get Tuning mode	3	Output in ASCII, the current tuning in "auto" or "manual"	
	Get Receiving mode	4	Output in ASCII, the current receiving mode in "Stereo" or "Mono"	
	Get Operating Status	5	Output in ASCII, the Frequency Preset number, Tuning Mode, Receiving Mode, Zone ID, IR ID, and Power status	
12	Purge EEPROM	111	Purge the EEPROM and restore it to the default setting	
13	MPU Reset	111	Reset the MPU to default settings	
14	Reserved for future use			
15	Program T118 Zone ID	888	Program T118 Zone ID "number"	
		222	Return T118 Zone ID	

01_10_1_1	Instruct Zone 1 T118 to power off
01_10_1_2	Instruct Zone 1 T118 to power on
01_10_1_3	Instruct zone 1 T118 to power on if it is off, or power off if it is on

12_10_3_21	Zone 12 T118 to tune into preset #21
03_10_4_107_50	Zone 3 T118 to tune to FM 107.50 MHZ
03_10_4_99_55	Zone 3 T118 to tune to FM 99.55 MHZ

(The 2nd digit after the decimal is 50K/step tuning for Europe)

03_10_2_1	Switch band to AM reception
03_10_4_05_80	Zone 3 T118 to tune to AM 580 KHZ
03_10_4_10_30	Zone 3 T118 to tune to AM 1030 KHZ

01_10_6_2	RDS information is fed to third party device continuously
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01_10_8_0	Zone 1 T118 to empty the preset currently displaying
01_10_8_15	Zone 1 T118 to write the displayed frequency into preset 15

02_10_11_1	When in FM 100.05 MHZ, Zone 2 T118 outputs FM10005 in ASCII string
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02_10_11_5	When in FM 100.05 MHZ, Zone 2 T118 outputs a complete set of operating data
	IZONE 05IITID 55IIFM10005IIPRESET 02IITUNING AUTOIIMODE STEREOIIZONE 02IIIR 1IIPower ONI

02_10_11_2	Simply output "21" in ASCII if the current preset listening is 21
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00_10_15_888_12 Program T118 Zone ID TO 12

00_10_15_222 Read Zone ID

Each time after sending a command to operate a T118, always pause for 0.5 sec then send command 11 to receive the update data feedbacks from the T118.

	RJ45	DB9-Male	DB9-Female	Circuit Item
Pin	1	3	2	TX
Pin	2	2	3	RX
Pin	4	5	5	GND

The carrier frequency: 38KHz.

XT1

Notes



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